

tric current is obliged to travel over the surface of the disk of plumbago or similar inferior conducting material, and consequently the resistance in the line and rise and fall of electric tension.

By this phonetic or speaking telegraph the diaphragm at the receiving-station will be influenced by the action of the electro-magnet in the same proportion as the rise and fall of electric energy produced by the vibrations of the voice, regardless of the musical key, and the utterances at one end are reproduced at the other with great clearness and accuracy.

The electro-magnet or helix  $t$ , introduced in the branch 10 between the main line and the earth, is adjusted by a rheostat or otherwise to neutralize the static charge and discharge in the line as heretofore employed by me in chemical and other telegraphs, and hence any false vibration from the effect of static charge or discharge are prevented.

The static resistance to a pulsation is lessened by the action of the electro-magnet helix, because in practice the eletro-magnet in the circuit aids the pulsation, so that it becomes more distinct at the receiving-station, and when the pulsation ceases upon the line there is a static discharge that is met and neutralized by the discharge of the electro-magnet, so that there is no prolongation of the

pulsation. This is of great importance in speaking-telegraphs in making the sounds clear and distinct instead of the tones running into each other.

I am aware that in kettle-drums and banjos the diaphragm is provided with screws for tightening the same.

I do not claim in my present instrument the combination, with the diaphragm, of a ring or frame, and screws for adjusting the parts.

I claim as my invention—

1. In a speaking-telegraph transmitter, the combination of a metallic diaphragm and disk of plumbago or equivalent material, the contiguous faces of said disk and diaphragm being in contact, substantially as described.

2. As a means for effecting a varying surface contact in the circuit of a speaking-telegraph transmitter, the combination of two electrodes, one of plumbago or similar material, and both having broad surfaces in vibratory contact with each other, substantially as described.

Signed by me this 18th day of April, A. D. 1877.

THOS. A. EDISON.

Witnesses:

GEO. T. PINCKNEY,  
HAROLD SERRELL.